N.A.C.A. BULLETIN

In Three Sections

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AUGUST 15, 1949

THE COST REPORTS OF A GREETING CARD MANUFACTURER OPERATING UNDER JOB AND STANDARD COSTS

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The cost work on which this article is based is clearly not carried on in isolation or merely for the purpose of limited inquiry into the integrity of accounting data. The six reports described, which rely heavily on the existence of operating controls and standard costs, are addressed to the interests of operating management and the refinement of these reports is specifically related to the cooperation of the cost department with other staff departments.

AS with similar functions in other companies and industries, the work done by the creative department, the purchasing department, and the sales department of a greeting card manufacturer is self-explanatory and rather easily rendered fascinating. However, most people outside of the accounting staff—and occasionally within it—do not have a very definite idea of just what the cost department is trying to accomplish. Yet, although the cost department may not be as glamorous as the creative department or the sales department, it *is* a vital part of the business. It may be a tonic to cost accountants and a revelation to others to realize how true this can be. It is the purpose of this article to show how the cost department cooperates with other departments to help American Greeting Publishers make profits and avoid losses.

First, it may be well to reemphasize that the cost department is a *service* department. All of the reports prepared are worthless unless somebody else reads them. It is up to us to prepare reports that have plenty of meat in them but are still digestible. In general it may be said that we prepare two types of reports, *first*, reports that help the department managers operate more efficiently and *second*, reports that show exactly how much money was spent on each type of greeting card that we manufacture.

However, descriptions of particular reports must wait until we have traced the flow of work which, among other things, inter-

relates the cost and operating departments. To start with, after the merchandise planning department has decided what type of cards and how many cards we will need for the coming season, a greeting card order is issued. The purchasing department then places the initial work with various lithographers and, as the invoices come in, the cost department matches up the charges and posts them to the correct job cost record. After the lithographed sheets are received from the outside processor, we begin work on them in our own press department.

Labor Costs—The Essential Part Played by Timekeeping

Here our timekeeping department swings into action. The timekeeping department is really the *backbone* of a good cost system. About 35% of the cost of our product consists of factory wages. It can readily be seen that, unless we know just how much time and money is spent on each job and on each operation, we cannot hope to have accurate cost information. We have daily time tickets on which the operators show the amount of time spent on each job and it is the responsibility of each timekeeper to verify the elapsed time and to enter other data, such as the production order number, sheet and card number, operation number, line, occasion, price, the hourly rate and job classification, the product code, etc. Timekeeping is *not* an easy job. It requires constant watchfulness to make sure that the original data is entered correctly on the daily time ticket.

All of our labor cost figures in the cost department stem from the timekeeping information. We feel this makes it so important that we keep a weekly score card of payroll claims and timekeeping errors to aid us in obtaining maximum efficiency. Over the past six months this score card shows that we have averaged only one and one quarter payroll claims per week. This is a record the timekeeping department can be proud of. As to clerical errors, the score card shows less than three errors a week per timekeeper. Since we process about 3,500 tallies a week and have over 10,000 entries, this means that the errors run only one half of one per cent.

What makes summarization of errors in the work of the timekeepers doubly important is that their efficiency affects not only the payroll and the dollar aggregates of labor costs but also the quantity side of the picture. The quantity of cards processed in each oper-

ation is compared to the amount of money paid to the operator. Since all of our cost figures are expressed in dollars per one thousand cards, it can be quickly realized that a cost system is no better than the production count. What good does it do us to know that we paid $79.23 in total for an operation, if we are not sure whether we processed 20,000 cards or 25,000 cards. We need accurate costs. Therefore we must have accurate quantities reported. However, the timekeeping responsibility here is less direct than in other matters. Our timekeepers cooperate with operating supervision to see that the quantity entered by the worker is as accurate as possible. At the present time all of our unit cost information on monthly reports is based on the accuracy of the count reported by the worker. This applies to counts and costs on individual operations. For overall costs on each sheet number and card number, we are fortunate in having access to more reliable data. The inventory control department bases its records on final quantities delivered to finished stores and its figures are carefully checked and audited for internal control. In order to secure the most accurate costs possible for each sheet number and card number, we recently started using these audited quantities made available by the inventory control department. This has eliminated any discrepancies in the quantities reported by the individual workers and insures that we obtain the true finished cost per one thousand cards.

Direct Materials and Overhead

Paper is our prime material for making greeting cards. Most of it is lithographed by outside processors before it comes into our plant. However, after it enters our plant, we add various finishing touches, such as spangles, flocking, sequins, sachets, ribbons, etc.—and these, too, are considered direct material. Also envelopes, kraft bags, cellophane bags, setup boxes, and other packaging items are part of the direct material cost of the product. One of the main jobs in the cost department is to charge these various direct materials carefully against each sheet number and card number. We recently set up perpetual inventory records for all direct materials and individual requisitions are now priced in the cost department and are charged to the respective jobs.

Overhead may be defined as the sum of all expenses other than direct labor and direct materials necessary for operating the fac-

tory. This includes indirect labor, supplies, depreciation, light and power, etc. Each of the lines and products which we manufacture must bear a part of these necessary operating expenses and this is accomplished by adding a certain per cent to the cost of each job to cover its share of the total overhead in the department. Our three operating departments are press, finishing, and packaging and, as the product moves through these departments, we accumulate the amount of money spent for labor, overhead, and material on each order until we arrive at the total cost of the finished greeting cards ready for sale.

Standard Costs to Measure Performance and Facilitate Costing

We are one company—and there are an increasing number—which makes use of standard costs in connection with a job costing system. There are two main reasons for having standard costs: as a measurement of performance and for accounting convenience. Under the heading of performance, we have a separate standard cost for each line, occasion, and price in our greeting cards and also for our other products, such as seals and tags, "write-a-notes," and gift wraps. In addition, on each of these products, the standard is itemized separately for press, finishing and packaging departments. Altogether we have over 550 different standard costs. Naturally, therefore, a very important phase of our work in the cost department consists of comparing these standard costs, step by step, with actual labor, material, and overhead accumulated against each job. Variances from the standard cost are reported to management so that excessive costs can be prevented. Shortly we expect to extend the detail of our standard costs. Our chief industrial engineer and his department are working on a program to develop labor standards for each operation in the plant. In conjunction with this standards program, we are planning to refine our standard costs so that we will be able to give management the cost variances on individual operations. This, of course, will afford a better control over the amount of money actually spent on each card. As to accounting convenience, it will be apparent that, when we are shipping a million cards a day, it is next to impossible to record the actual cost of each different card sold. Therefore, we make use of the standard cost for costing monthly shipments and also for valuing inventories for balance sheet purposes.

Reports Rendered by the Cost Department

With the background that has been given, it may now be in order to examine briefly the various reports prepared by the cost department and to see what they try to accomplish:—

Cost report by operations—This report is issued every month for the press department and the finishing department. It shows the direct labor and overhead cost per one thousand sheets or cards for each operation performed, such as embossing, die-cutting, machine folding, flocking, tipon, etc. The average cost of each operation for the past six months is also furnished, thus enabling the manager to check the cost for the current month against the cost trend. We are planning to work with the industrial engineering department and eventually to embody the standard labor cost for each operation in the same report. For information on the actual cost of finishing on a *specific* card, we are building a library of greeting cards with representative finishing touches. This library will be available for reference by the purchasing department, the creative department, the production engineering department, etc. It will show the actual cost for various sachets, tip-ons, ribbons, attachments, and other novelty finishing touches and will carry the following data:

1. Type of finishing touch.
2. Labor cost per M.
3. Overhead cost per M.
4. Material cost per M.
5. Total cost per M.
6. Date run.
7. Quantity run.
8. Special remarks.

Scrap Report—This report shows not only how many cards are scrapped in each department and what they are worth, but also shows (which is more important) the *reason* for scrapping, such as defective lithography, excess ink, defective machine folding, excess glue, defective flocking, soiled cards, etc. By knowing the *reason* for scrap, management can take corrective action where the amount of loss is serious. We are planning to work with the quality control department in establishing a normal scrap allowance so that this report can be made even more useful and will disclose any operation that is running over the allowance. This report is issued weekly to give management information as quickly as possible while action can still be taken to reduce scrap losses.

Departmental overhead report—This report is issued every month for each of the operating departments. It itemizes each

classification of indirect labor, such as supervisors, clerks, inspectors, stockmen, etc., as well as each element of factory expense, such as supplies, depreciation, repairs, taxes and insurance. The per cent of each of these items to the amount of direct labor in the department is shown, both for the month and year to date. Thus, the manager can see at a glance exactly what makes up his departmental overhead rate. We are planning to work with the budget department to show also on this report the *allowed* per cent for each item of overhead, so that action can be taken on any items that are out of line.

Variance report—This report is issued every month for each of the three operating departments. It shows the sheets or cards that have been completed during the month and compares the actual cost of production with the standard cost. It is based on the finished card quantities referred to earlier, audited under the procedures of the inventory control department. Any sizable variances between actual cost and standard cost are explained in the footnotes, so that management can take immediate steps to reduce excessive costs. These monthly reports also serve as an analysis of the total variance shown on the profit and loss statement as a deduction from gross profit.

Cost Summary by sheet number—This report is issued as each sheet is completed and shows the following breakdown of costs:

Paper	Folding
Lithography	Finishing
Embossing	Packaging
Die cutting	Total cost

It provides a comparison of estimated cost, standard cost, and actual cost, and again emphasizes any excessive costs with appropriate explanations. As an added feature, it shows the yield of cards at each stage of production and points out the overall shrinkage on the job. This report is really the "grand-daddy" of them all, because all of the efforts of the cost department culminate in this revealing summary which gives the "life story" of the particular job.

Over-all comparison of budget with actual cost—After all of the sheets in a given program, such as Christmas or Valentine, have been completed and reported separately, we prepare an overall summary for the occasion, which groups all of the cards of the

same line and price. Then the total actual cost is compared with the total cost estimate and the variance is shown by the price class. This enables management to see whether it went over or under the budget on each line, occasion, and price classification.

Other reports—There are many other reports issued by the cost department but these six form the nucleus of the stream of information flowing from our department to management and to the other departments.

Refinements and Objectives

During the past few months we have made certain improvements in the cost system which deserve mention and which, I think, are of general interest.

1. We have refined the labor operations to afford a better analysis of direct and indirect labor costs.
2. We have eliminated considerable hand posting and made greater use of tabulating equipment for accumulating costs.
3. We have set up records for controlling all direct materials and charging them against production orders.
4. We have set up a full-fledged job cost system which has laid the foundation for the analytical reports already discussed.
5. We have improved the accuracy of both our standard costs and the actual costs furnished to other departments.

To summarize, let us briefly enumerate the goals that we are striving to attain in our cost system:—

1. To provide accurate costs for sound estimates.
2. To emphasize any costs that are off standard or excessive.
3. To make comparisons between our own costs and the cost of buying the work from outside processors.
4. To highlight any leaks or losses and make recommendations to management for improvements.
5. To take responsibility for accurate gross profit ratios and to furnish reports that will help keep the company in the black and out of the red.
6. To keep management advised of cost trends so that future plans can be made on a sound basis.

For my closing thought and one of more importance than is commonly understood, I would like to repeat that the cost depart-

ment is a *service* department and that we constantly try to make ourselves more useful to management and to the other departments. We realize that it takes cooperation from all departments of American Greeting Publishers to guarantee a successful company. This stress on service to other departments holds no element of weakness or meekness. It is a simple and direct recognition of function. In the exercise of this function, it is proper for the cost department to display firmness and, at times, aggressiveness so that its work will be made use of.

COMING ARTICLES

In the *N. A. C. A. Bulletin*, September, 1949

Net Profit Analyses for Profit Betterment
by W. A. Hensel

Coordinating Purchase and Use Factors in the Stocking of Raw Material
by Norman E. Rieger

"Extra Work Voucher" System for Disclosure and Control of Labor Variances
by Robert T. McGeorge

Two Compact Forms for the Measurement of Operating Performance Under Standard Costs
by Norman A. Coan

An Economical Payroll System Featuring Centralized Processing of Employee Deductions by Machine Methods
by D. Phillip Beaudry

A Detail-Posted General Ledger Through the Use of Tabulating Equipment
by Stanley G. Wall

Putting the Factory Ledger on Punched Cards
by Clarence J. Nelson

Meeting the Financial Control and Cost Problems of a Publisher of Classroom Periodicals
by John E. Shirley

JOB ORDER COST ACCOUNTING PROCEDURES FOR A TAG MANUFACTURER

by THOMAS L. EVANS,
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It is a principal point with the author of this paper that the effectiveness of a job cost system may well be dependent upon the forms employed in conjunction with it. Accordingly, the text of the present article, outlining job cost procedures for a company engaged in a line in which custom work makes for this type of costing, is accompanied by illustrative forms for bringing cost detail systematically into the records and summarizing it for control uses.

A JOB-ORDER cost accounting system serves primarily in determining the total cost of an order and provides useful information when making future estimates on similar work. An important advantage of a well-planned cost system is its value in effecting coordination of the activities in the job order plant. This is to say that the system must not only guide management in pricing the product, but also serve as a basis for planning the work and controlling operating costs as the jobs progress through the several stages of manufacture.

The key to this approach is largely dependent on the forms used in the procedure. They record the information necessary for the conduct of the business and for the improvement of business operations. When this information is recorded promptly as the job continues on its way in the regular production sequence, these data permit current appraisal of the work as the job is processed. The forms used in the job cost system described in this article, which reflects procedures in use by Keener Manufacturing Co. of Lancaster, Pa., are intended to afford a simple means of appraising the cost factors currently. The system is custom designed to fit in with the manufacturing operations without disturbing the functional routine in the factory.

Tag Manufacturing Operations

The manufacture of tags is one of the most diversified in the printing industry. The variety of tags are many. Each user re-

quires different grades and colors of paper, various tag sizes and shapes, art work, and color printing. The manufacture begins with the slitting of the huge rolls of paper into proper widths which are automatically rewound in rolls, ready to be placed on the automatically operated tag press machines through which they pass in continuous operations which include: printing on one or both sides in solid or multiple colors, attaching glued patches for stringing or wiring, eyeleting, consecutive numbering, perforating, and finally cutting to designed completed tag, after which they are

MATERIAL REQUISITION AND SUMMARY

Quantity M Grade Order No.

Color Slit size Date

Shear Cut Die Cut Bleed trim

PAPER—WEIGHT OF ROLLS							FOR OFFICE USE	
Needed	Delivered	Returned	Net Used	Waste Allow.	Waste Allow.	Weight	Unit Cost	Amount
Lbs.	Lbs.	Lbs.	Lbs.	%		Lbs.		

DIRECT MATERIALS								FOR OFFICE USE	
	Description	Quantity	Formula	Unit	Waste Allow.	Waste Allow.	Unit	Unit Cost	Amount
Patches				Lbs.	%		Lbs.		
Twine									
Wire									
Inks									
Glue									
Eyelets									
Barbs, Hooks									
Stock Stats.									
Finished Goods									
Boxes									
Cartons									
Electros									
Dies									
Art Work									
Miscellaneous									
							Materials value		
Paper slitting cost,			lbs @			per cwt. (Paper)			
Freight—In @	% of Materials value								
							Totals		
Remarks:		Signed							

EXHIBIT 1

conveyed to the packers. The packers place the tags in boxes of from 250 to 1,000 depending on size and whether strung with twine or wire. After an order has been completed, the boxed tags are trucked to the shipping department for packing into cartons and shipment. On large orders of 100,000 to 10,000,000 tags, partial shipments are made as specified on the order.

Control Accounts and Cost Classifications

From a general ledger viewpoint, five control accounts are maintained: (1) manufacturing production costs, (2) shipping costs and expenses, (3) general and administrative expenses, (4) selling and advertising expenses, and (5) financial expenses.

Manufacturing costs include materials which enter directly into, or that can be identified with the product and which can be charged directly against the order, viz: paper, patches, twine, wire, inks, glue, eyelets, barbs, hooks, electros, dies, art work, boxes, cartons and miscellaneous purchases traceable to specific orders. Manufacturing costs also include direct labor, consisting of chargeable wages which can be specifically identified with the order during processing operations, and factory overhead expenses applied to the direct labor on an hourly rate basis for each production center. Overhead expenses include all manufacturing expenses not covered by direct material or direct labor categories. The principal items are: supervision; indirect labor (which cannot be associated directly with the job order); idle, lost, waiting, and cleaning time; monotype casting; heat, light and power; building and machine repairs; rollers, storage, hauling, rent of property (if not company owned), miscellaneous accessories and supplies, industrial insurance, real estate and property taxes, social security taxes on factory payroll, depreciation on fixed plant assets, and miscellaneous.

Shipping costs comprise shipping labor directly applied to specific orders, tying of boxes, packing in cartons, weighing, labeling and addressing for shipment. Boxes and cartons used are listed by the shipping clerk on material requisitions accompanying each order. Indirect expenses in the department are absorbed against direct labor hours charged to the order, on a rate per hour basis.

General and administrative expenses consist of executive and clerical office salaries, company and group life insurance premiums, postage, telephone and telegraph, office stationery and supplies, dues and subscriptions, corporate taxes (other than Federal and state income taxes), auditing and miscellaneous. Selling and ad-

vertising expenses are made up of advertising, traveling, and sales office expenses. Commissions, while a selling expense, are treated separately as a matter of control. Principal financial expenses are interest on borrowed money and cash discount allowed for prompt payment of accounts.

Handling the Sales Order and Requisitioning Materials

When a sales order is received, it is reviewed by order clerk who obtains all necessary information preparatory to entry and processing of the order. In case there are unusual specifications, calling for tags other than those ordinarily manufactured, the superintendent is consulted for clarification and the writing of specifications on the order. After all information concerning the order has been cleared, the sales order is given to typist for entry on serially numbered sales order forms in duplicate. The order clerk makes such comments as may be necessary to make sure that the information shown on order will be clear when given to the superintendent preparatory to being processed. The original copy remains in the office awaiting notice of shipment for billing to customer.

The duplicate copy is attached to a serially numbered heavy manila envelope, together with any supplementary information relating to the job. It is used as the factory order copy, as the specifications provide full instructions for processing, i.e. grade and color of paper, size of tags, patches, eyelets (if any—size), perforations, color of ink front and color back, numbering (if any) following specific instructions, string or wire (description of length, style of knot, loop or loose ends, color, etc., gauge of wire, length, twists), etc. At this point the Material Requisition and Summary form, Exhibit 1, is typed showing order number, date, quantity of tags ordered, grade and color of paper, etc. This information is obtained from the sales order duplicate and is likewise attached to the manila envelope.

From the instructions on the sales order duplicate, the superintendent completes the information on the material requisition and summary form for the purpose of drawing from stock the needed paper to be slit into the required size, indicating on form the slit size, type of cut, and allowance for bleed trim. The requisition form is given to the head slitter, who controls paper stock, to draw the rolls from main stock or from cut rolls in cut stock locations. To meet sales order requirements, the paper is slit into proper

width and the slit rolls are delivered to the operator on whose press the order will be processed. After writing in the weight of the paper delivered, the slitter gives the requisition to the press operator. The requisition is then reattached to the manila envelope with the sales order duplicate. (After the order has been completed, any excess rolls of paper will be returned to stock by the slitter who will indicate on the requisition the weight of the paper not required and, by subtraction, the weight of the paper used. A waste allowance is added by the cost clerk, based on experience of loss.) Other quantities of materials withdrawn to complete an order will be written in on the requisition opposite the respective items.

Processing and Shipment Routine

After the material has been provided, the superintendent delivers the order to the compositor to set up the composition typeform in accordance with specifications and the sample of printed tag or art design furnished. Electros, if needed, are ordered. After setting up the form, the compositor sends a printed proof to the office for approval before delivering the composition typeform with the duplicate sales order to the tag press department. The superintendent receives the approved typeform from the compositor and delivers it with the sales order to the tag press operator on whose press the order will be processed. The sales order (attached to the manila envelope) remains with the press operator until the tags are printed and then follows the packed boxed tags to the next operation. Should the order call for stringing or wiring of tags, the sales order accompanies the boxed tags to the automatic stringing machine or machines on which this operation will be performed or to the hand stringing department. As the tags are being strung or wired, they are repacked to be ready for shipment. The sales order with attachments accompanies the boxed tags to shipping department.

Shipping instructions on the sales order provide information whether to ship in one shipment or in part shipments and indicate the manner of transportation (carrier), also whether "prepaid" or "collect." The shipping clerk follows these shipping instructions. After tying the boxes, on outside of which a sample of tag is attached and quantity shown, the clerk packs them in shipping cartons, labels, and ships them. He then writes on the material requisition, in space provided, the size and number of boxes and

JOB CARD

CLOCK No._____ NAME_____

OPERATOR ☐ PACKER ☐ HAND ☐

ORDER No._____ DATE_____ ACCT. No._____

QUANTITY_____M SCRAP_____WT.

DEPT._____ MACHINE_____

NON-RUNNING TIME

SET-UP:

_____ NOON
_____ NOON

START_____
STOP_____
ELAPSED TIME_____
RATE $_____

OPERATING:

_____ START
_____ STOP

START_____
STOP_____
ELAPSED TIME_____

OPERATING:

_____ START
_____ STOP

START_____
STOP_____
ELAPSED TIME_____

OPERATING:

_____ START
_____ STOP

START_____
STOP_____
ELAPSED TIME_____
TOTAL " "_____
RATE $_____
DIRECT_____

NON-PRODUCTIVE TIME
DESCRIBE

_____ START
_____ STOP

START_____
STOP_____
ELAPSED TIME_____
RATE $_____

TOTAL WAGES $_____

NON-RUNNING-CODE

C. F.—CHANGE FORM		R. M.—REPAIR MACHINE	
S. D.—SHARPEN DIE		W. S.—WAITING FOR STOCK	
S. P.— "	PATCH	W. F.— " "	FORMS
S.PU.— "	PUNCH	W. O.— " "	OPERATOR
S.C.K.— "	CORNER KNIFE	C. M —CLEANING MACHINE	
S.C.O.— "	CUT OFF "		

EXHIBIT 2

size and number of cartons which have been used for the order. On the reverse side of sales order, he also writes in all required shipping data for billing information. In case of partial shipments, each shipment is listed with complete information.

Each day after shipment on orders, the sales order manila envelopes with duplicate sales order copies, supplementary information with instructions, and samples of tags attached, are delivered to the biller's desk in the office, together with bills of lading. In the case of partial shipments, the heavy manila envelopes with duplicate sales order and attachments are returned to the superintendent for processing of the remainder of the order. This procedure is repeated after each partial shipment until all partial shipments on an order are completed.

Job Card Procedure

A separate Job Card, Exhibit 2, is used by each operator for each order worked on. In case a job runs over from the day shift to the night shift, the night shift operator punches a job card against the same sales order number as that punched by the day shift operator. The job card differs from the day or clock card in that the job card records the hours applied to the job while the clock card records the hours the employee is in the plant throughout the day. At the end of the week the total time charged to jobs worked on or to indirect labor (idle, lost, waiting, or cleaning time), repairs and maintenance, baling paper, firing boiler, etc., must equal the hours paid for as recorded on the clock cards.

Composition Department—When the superintendent first delivers the order to the composition department, a job card accompanies the order and carries information as to clock number and name of compositor, type of work to be performed, order number, date, and department. The card is punched at "start" opposite "set-up" (writing composition in the blank space) when setting up the typeform and again, after the typeform is completed, at "stop." The elapsed time indicates the working hours applied to the job. Should there be time lost not attributable to the job, the card is punched on the lower left side opposite "non-productive" at "start" and "stop." The cause for lost or nonchargeable time is written in.

Tag Press Department—When the superintendent assigns an order to a tag press operator, a job card is given to him carrying similar information and designating the machine on which the job

JOB WAGES AND MANUFACTURING EXPENSES (OVERHEAD) DISTRIBUTED TO PRODUCTION CENTERS

ORDER NO.

DATE

OPERATIONS AND PRODUCTION CENTERS

1—Composition 2—Automatic Tag Press 3—Packing 4—Automatic Stringing and Wiring 5—Hand Stringing
6—Job Press 7—Shipping 8—Hand Patching 9—Hand Eyeletting 10—Hand Collating 11—Hand Stitching 12—Box Making

DIRECT WAGES AND OVERHEAD DISTRIBUTION SUMMARY

Composition				Tag Press Operators Machine (*Letter*)				Packers (*Mach.*)				Auto. Stringing and Wiring				Hand Stringing			
Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead

Job Press				Shipping												Account No.			
Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead	Oper. No.	Hrs.	Wages	Overhead

EXHIBIT 3

is to be processed. When starting to set up the job, the operator punches on right side of card opposite "set-up" at "start." When the set-up is completed and a trial run shows the machine is ready to start the run, he punches at "stop." The elapsed time between "start" and "stop" indicates the set-up time required, which is charged to the job.

When the running of the job gets under way, the card is again punched at "start" opposite "operating," providing the operating start of the job is the same day as the set-up of the job. Should the start of the job be the next day, a new card is used to record the operating time on the job. A separate card is used for each day, even though the job may run for several days or several weeks. The purpose of this is to balance the job operations weekly against the daily "in" and "out" clock cards from which card the operator is paid, thus tying in the wages chargeable to the job with wages paid.

Packing Department—When the operator punches his job card for running the job, the packer simultaneously punches her job card which carries corresponding information to that on the cards used by the press operator and designates the machine on which the packing operation is being performed. The procedure for the punching of job cards, applicable to operators, applies to packers as well, with one possible exception. There might be waiting time for the packer while the press machine is undergoing repairs, for which, if no temporary job is available elsewhere, waiting time will be punched on the lower left side of the card opposite "non-productive" at "start" and then at "stop" when the work on the job is resumed. The cause for the waiting time is written in on the card. When the job is resumed, it will be necessary to again punch the card at "start" in the additional space provided under "operating" and likewise at "stop" at the end of the job or at the end of the day.

Stringing and Wiring Departments—When stringing or wiring operations are required, the order with all written data attached to the manila envelope is passed along with the boxed tags from the tag press to the assigned stringing or wiring production center, whether the operation is to be by automatic machine or by hand. There the punching of job cards procedure will follow that described for the tag press department in respect of setup and operating time record, except for department designation.

Miscellaneous Operations—In addition to production from the tag presses and the automatic machine stringing and hand stringing departments, direct labor is applied to box making, hand patch, eyeleting, job press and stitching machines, as well as to collating prior to the stitching operation. Direct labor on job orders applying to any of the foregoing operations will require a job card so

JOB ORDER COST CONTROL SUMMARY

For _____ Order No. _____

Description _____ Quantity _____ M Date _____

Direct Materials	Amount	Direct Labor	Mach.	Hours	Wages	Overhead
Paper		Composition				
Ink		Tag Press Operators				
Patches		Packers				
Twine		Auto. Stringing and Wiring				
Wire		Hand Stringing				
Inks		Job Press				
Glue		Shipping				
Eyelets		Hand Patching				
Eo Hooks, Dandlocks		Hand Eyeletting				
Stock Stationery		Collating				
Finished Goods		Hand Stitching				
Boxes		Box Making				
Cartons						
Electros						
Dies						
Art Work						
Miscellaneous		Totals				
					Wages	
		Total Wages and Overhead				
Total Direct Materials		Materials Cost				
		Paper Slitting				
		Freight—In				
Remarks:—		Total Mfg. Cost				
		Administrative Expenses				
		Selling Expenses				
		Interest, Discount, Etc., Expenses				
		Commissions				
		Freight—Out				
		Total Cost				
		Profit or Loss				
		Selling Price				

EXHIBIT 4

that time can be recorded against the order. The writing in and punching on job cards follows previous descriptions, except that type of machine used is substituted.

Summarization of Job Costs

At the top left of the job cards, space is provided to record the quantity of good tags completed each day (if carried forward to

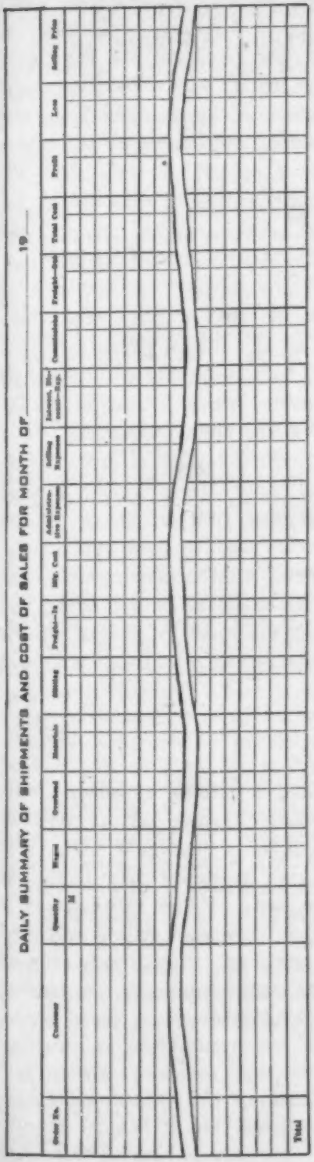

EXHIBIT 5

the next day) or at the completion of the job (if completed the same day it is started). Job cards are collected daily for delivery to the office for extension and verification that accumulated hours chargeable to jobs and otherwise agree with the total time for the week recorded on the "in" and "out" clock cards. After the verification and extension, the amount of "overhead" hours absorbed and the wages charged to the job order are transferred to the Job Wages and Manufacturing Expenses control sheet, Exhibit 3, under the respective production center columns. One sheet is used for each job order. The accumulated hours, whether in one amount or many, are extended at the production center hourly overhead rate, thus reducing the number of calculations. From this record —at the completion of the job —the accumulated hours, wages and overhead expenses charged to the job are transferred to the Job Order Cost Control Summary, Exhibit 4, under the proper columns and opposite the respective production centers.

The job order cost control summary is a resume of the cost of each job order. To it is posted the detailed informa-

tion from the material requisitions. Slitting and freight-in costs are posted to the outer right side column following the total of materials cost. The detailed information from the job wages and overhead summary is posted to the hours, wages, and overhead columns opposite the respective production centers, identifying the machine by letter as each machine uses a different overhead per hour rate. Addition of the amounts in or carried to the final column will produce the total manufacturing cost of each order. To this is added an amount for administrative, selling, financial expenses, etc. This is arrived at from a predetermined percentage to sales plus direct commissions and freight out. Subtracting total cost from the selling price will show the profit or loss on the order.

A bird's-eye view of the results of all jobs on which shipment has been made is afforded by the Daily Summary of Shipments and Cost of Sales, Exhibit 5. To this form are transferred the condensed details from the job order cost control summary. The summarization provides estimated preliminary profit and loss results for the month prior to the monthly closing of the general ledger. The total of the manufacturing cost column gives the amount of the debit to manufacturing cost of sales and of the credit to goods in process in the general ledger, relieving the goods in process account of prior debits for materials, direct labor, and overhead expenses summarized from the monthly journal entries as the three elements of cost are charged to productive orders in process.

Keeping a Firm Hand on Results

When a company knows its costs, it is possible to follow a uniform pricing practice. If competitive selling prices indicate narrow profit margins, a cost plan permits intelligent analysis of the functional cost factors which may relate to manufacturing, selling, or administration. On the basis of this approach, it is possible to review the methods and processes of selling and production and improve upon inefficient operations apparently causing difficulty. The factual analyzed data on the job order cost control summary will provide especially useful information for a sound course of action.

COST ANALYSIS AND ACTION ON COSTS

It is my feeling that exercise of the function proposed by W. A. Lewis in "Regional Cost and Variance Reports" in the Cost Forum of the April 15, 1949, *Bulletin*, has ramifications beyond those presented. Mr. Lewis states that his company "found it profitable to provide an additional accountant in the role of cost analyst" to develop reports detailing the reasons for variances.

This cost analyst has a constructive function. Briefly, his work is a refinement of a staff function already exercised by the cost department. He shows in greater detail the cost picture as it is. As a result, his picture prods management to act so as to make the cost picture more nearly as it should be. The cost of presentation of this refined data is justified only to the point at which cost reductions are effected at least equal in amount to the added expense. Bear in mind that these reductions must be attributed directly to the special reports. From a practical standpoint, I believe a point will be reached at which this additional cost will not be justified by results, because of the limited scope of this staff function.

Mr. Lewis states that the qualifications of this cost analyst "include a well-rounded background in accounting, a thorough knowledge of the manufacturing process, and a sympathetic understanding of the problems of production foremen." A man possessing this technical knowledge and these personal qualities can be employed to greater advantage than merely to present the cost picture as it is. At no greater expense, his function could be broadened to include a wider scope of the business picture. His versatile ability could be utilized to coordinate the *action* taken to make this picture more nearly approximate what it should be. He should serve as a coordinator of staff and line functions at the supervisory level. He should be responsible only to top management. He should attack both cost and quality problems, with no holds barred, looking for faults and presenting them impartially to management for correction.

Visualize the potential benefits of this man's efforts in his expanded endeavors. He could go into a department particularly harassed by cost or quality problems. He could aid the foreman by interpreting industrial engineering data in the foreman's language, then indicating what line of approach is indicated for solution of the problem. With his knowledge of staff functions, the analyst could bring to bear upon each particular target all the big guns of specialized data applicable to the situation. He could devise temporary reports designed to diagnose the current problem and to help eliminate the condition. His enthusiasm and willingness to help the line foreman would instill in the foreman the desire and will to act to eliminate or minimize cost leaks and the like.

The wrong man in the role could confuse both line and staff groups by misguided or misdirected effort. However, the right man could promote better relations and mutual understanding between line and staff men, and could play a constructive role in the channeling of the efforts of both groups toward the goal of more and better products at less cost. (*M. M. Kosak, Fall River*)

POINTS OF VIEW

The accounting profession must, if it desires to retain its status, seek means of orientation and education of other groups in its possibilities as a working tool for management. It must convince others that it has the "know how" of furnishing the necessary data for intelligent planning by engineers. Most of all it must gain the respect and confidence of other professional groups. *(Christian P. Gerber, Jr., New Orleans)*

* * *

Functional budgets should be expressed in units and terminology readily understood by the person responsible for each fraction. (Marion B. Hudson, Dallas)

* * *

The average age of the members whose deaths have been reported in the *Bulletin* has been in the low 50's. What is the reason for this? Are the facts behind the figures just accident or does the accounting profession present secret hazards? *Must* we die so young. *(Kurt Schwarzkopf, Hartford)*

* * *

Incentive wage payments are becoming more and more popular as devices to control and cut costs by offering them to supervisory personnel. (John L. Alley, Birmingham)

* * *

Introducing the college students to cost accounting is a difficult feat, especially as many schools of business allot only one semester to it. Thus the instructor must immediately jump into the maze of manufacturing transactions and hope that his group of "innocents" can overcome their lack of first-hand knowledge of plant operations. *(Bertram Broder, Binghamton)*

* * *

Considering the space occupied by a file, the depreciation charged off on it, purchases of supplies, clerical salaries, and supervisory expenditures, it costs at least $139.32 annually for every filing cabinet the company owns. (Frank Heller, Dallas)

* * *

What is the internal accountant's place in tax planning. To whom does the average business enterprise look for its tax advice and tax planning? Should the internal accountant defer to management's opinion on doubtful points of the tax law or should he press his own? *(Edward W. Plodzik, New Orleans)*

CONTROLLING JOB COSTS IN A MACHINE SHOP

by H. A. WOOSLEY,
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Pointing out that cost control in a machine shop is in great part a matter of intelligent management of the cost of indirect labor and miscellaneous manufacturing costs, the author of this paper offers a control procedure which provides a "regulatory standard" for such costs, keyed to realizable sales prices for the production of the shop. This "standard" is applied on the basis of job cost records common to machine shop accounting.

MANAGEMENTS of smaller companies are beginning to realize that more efficient and economical operation is imperative if they are to continue in business. The vital importance of cost control in manufacturing operations is accorded general recognition and many small-scale manufacturers have proven, in actual operation, the value of maintaining an adequate cost system when care is taken to make it inexpensive to install and operate.

Cost Center Setup

In the operation of the job cost system which is outlined here, the basic preliminary step is to determine the level of operation necessary to utilize efficiently the available plant facilities. The next step is the establishing of costs which can be absorbed by such operations if there is to be a margin for profit. This means, in brief, that we determine practical capacity, estimate the sales value of this production, reduce it to machine hour bases for each cost center, and control costs within the "sales price rate" per machine hour so arrived at.

As the foregoing implies, the normal procedure of quoting sales prices is in terms of hourly rate estimates. For this reason, the unit by which performance can best be measured in machine shops is the productive hour. In consequence of this, the machines are grouped into centers giving consideration to similarity of work, precision of operation, and, relationship of other operating cost factors on which is is necessary to establish a rate for which pro-

JOB COST TICKET

	Elapsed Time		Oper. No.	Good Pcs.	No. Sp'ld	MAN NO.
		Out				Job No.
		In				Dept. No.
		Out				Workman Name
		In				Part or Drawing No.
		Out				Part Name
		In				Operation Description
		Out				
		In				Mach. No. / Name of Mach.
		Out				Str. Time Hours / Overtime Allowed
		In				Str. Time Rate / Overtime Rate
		Out				Str. Time Pay
		In				Prem. Pay
		Out				Excess O. T. Pay
		In				
		Out				
		In				Total Labor

JOB NO.

MAN NO.

	Hours	Rate	Amount
Str. Time Hours			
Excess O. T. Hrs. Allowed			
Burden			
TOTAL			

EXHIBIT 1

duction can be sold. Such a grouping might result in the following centers:

1. High precision boring—thread grinding.
2. External, internal, and surface grinding.
3. Lathe, milling, and radial drill press.
4. Bench work, experimental, heat treat, and welding.
5. Semiautomatic production work.
6. Production bench, bench lathes, drill press, and miscellaneous.

Each center is analyzed separately to determine the productive hours which should be performed to aggregate the total hours necessary to maintain the level of operations previously established. Hourly rate sales prices are set for each at current market rates and costs are necessarily controlled from sales prices so set, any tendency toward basing sales prices on costs being avoided.

The basic elements of costs to be absorbed by the established sales rate are the usual ones of:

1. Direct labor
2. Indirect labor
3. Other manufacturing costs
4. Selling expenses
5. Administrative expense

It is obvious that the manufacturing cost elements which are most in need of effective control are the items numbered two and three above. Direct labor rates are to a great extent standardized throughout any given industry and the variation of rates from month to month is small. Selling and administrative costs, which naturally fall in a classification other than manufacturing costs, should be segregated by division and controlled by other methods.

The Individual Cost Center—An Example

The process of starting with an established hourly sales price rate and arriving at related cost allowances can be illustrated by a single instance. An hourly sales rate of $4.50 has been established for the type of work performed in this center and, within this amount, a profit of ten per cent of costs is expected, representing 41 cents of the hourly sales rate. From the analysis of past experience and careful current examination, it is determined that 65 cents per production hour is adequate to cover selling and administrative expense. The current direct labor rate for the type of

JOB COST SHEET

JOB NUMBER

CUSTOMER _____

CUSTOMER ORDER NO. _____ DATE _____

DESCRIPTION

DATE INVOICED

INVOICE NUMBER

			DATE	MATERIAL			
				P.O. OR S/M NO.	ITEM		TOTAL AMOUNT

	COST	MARK UP %	MARK UP AMOUNT	SELLING PRICE BASED ON T & M	SELLING PRICE BASED ON CONTRACT
DIRECT LABOR					
BURDEN					
DIRECT MATERIAL					
SELLING AND ADMINISTRATION					
MISC.					
TOTAL					

EXHIBIT 2

work performed in this machine center is $1.54 per hour. The hourly sales rate of $4.50 would now be comprised of the following factors:

Profit	$ .41
Selling and administrative expense	.65
Direct labor	1.54
	$ 2.60
Balance unallocated	1.90
	$ 4.50

The unallocated balance of $1.90 is the amount which can be spent (but should not be exceeded) for indirect labor and other costs per productive hour in this machine center. This figure may now be regarded as the applied overhead rate. In this process, a so-called regulatory standard has now been established for this center through which management, by making proper effort to control over-all costs, can operate on a profitable basis, provided such control is in fact effective and plant operations are held close to the related level. Actual expense per hour will naturally fluctuate considerably in comparison to the applied overhead rate if plant operations vary to any appreciable extent.

Job Cost Forms

Forms necessary to operate the job cost system can be kept simple. Exhibit 1 shows the cost ticket in use. Similar cards are prepared daily in the shop for each production worker. A separate card is prepared for each job worked on and for each charge to a machine in a different center. Machines are individually numbered with a prefix letter denoting the machine center into which it has been grouped. This machine number is indicated on the cost card together with the job number, overhead account number, worker's clock number, hours worked and any other pertinent information.

Daily all cost cards for the previous day are processed and office personnel apply to each card the worker's hourly wage rate and the hourly applied overhead rate for the machine center indicated, and extend totals according to the hours worked on the job. The cost cards are then sorted by machine centers and records are kept

daily of the total hours performed in the individual machine centers, as well as of the applied overhead and direct labor. The cost cards are sorted again by job number and records are similarly kept for each current job in the shop on job cost sheet illustrated by Exhibit 2.

The Control of Shop and General Overhead

In the control of the shop overhead and miscellaneous costs, it is important, if comparisons with the applied overhead rate are to mean anything, that actual costs applicable to the various centers be prorated accurately. Examples of shop costs chargeable directly to machine centers are:

1. Depreciation on individual machines.
2. Facilities used in direct conjunction with the machine.
3. Building floor space attributable to the individual machine and facilities.
4. Replacement parts.
5. Repairs.
6. Supplies.
7. Direct and indirect labor repair and maintenance costs which are in direct conjunction with machine centers.
8. Expenses in the nature of direct charges or incurred by invoices from outside vendors which can be charged to a specific machine center.

General shop expense can be charged to all machine centers, allocated on the basis of productive hours performed in individual centers for the current operating period. On an over-all basis, expense incurred and applicable to manufacturing, engineering, selling, and administrative divisions should be segregated in the general accounts for accurate comparisons of actual costs to amounts indicated as standard. Costs charged to manufacturing machine centers are totaled and divided by the productive hours performed in each center to determine the expense per hour incurred, for a comparison with the manufacturing overhead applied per hour rate. This method clearly sets forth for analysis individual expense items which are excessive, as well as designating which machine centers have expense in excess of the applied overhead rate. Engineering, selling and administrative expenses are itemized, totalled, and divided by the total shop productive hours to determine actual costs per hour in each case.

Conclusion

A number of variations exist which can be applied to the basic structure of this system for adaptation to other plants with operations to which this particular type of cost control is not altogether suitable. The principal purpose of the foregoing description is to portray the ease with which a simplified, economical, and adequate cost system can be installed in the average machine shop. The success of the operation of any system of cost control depends on its administration. All personnel should receive a thorough explanation of the detail and overall functions of the system and the objectives in view. The necessity for consistency should be emphasized and the responsibilities of individuals clearly outlined.

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